



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,653	06/23/2003	Toru Katafuchi	2635-165	6142
23117	7590	08/29/2006	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			VATHYAM, SUREKHA	
			ART UNIT	PAPER NUMBER

1753

DATE MAILED: 08/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/600,653	Applicant(s) KATAFUCHI ET AL.	
	Examiner Surekha Vathyam	Art Unit 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/23/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what is meant by the phrase "as outer percentage", recited in lines 3-4 of claim 2.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 3 – 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Oshima et al. (US 6,071,393).

Regarding claim 1, Oshima ('393) discloses a gas sensor (Fig. 1, column 16, lines 9 – 11) comprising a measurement chamber (2 and 4) a sensor cell (8) and an electrochemical cell (6 or 7); said sensor cell comprising an active electrode (8-a) facing said measurement gas chamber (4), a first reference electrode (8-b) forming a pair with the active electrode (8-a), and a solid-electrolyte plate (5-4) having both the electrodes; and said electrochemical cell comprising an inactive electrode (6-b or 7-a) facing said

Art Unit: 1753

measurement gas chamber (2), a second reference electrode (6-a or 7-b) forming a pair with the inactive electrode (6-b or 7-a), and a solid-electrolyte plate (5-1 or 5-3) having both the electrodes; said inactive electrode (6-b or 7-a) comprising a metallic material containing at least one selected from Au, Ag, Cu and Pb (column 10, lines 30 – 31) and an additional metallic material Rh (column 10, line 27 – 28).

Regarding claim 3, the electrochemical cell is an oxygen pumping cell (column 16, lines 14 – 16).

Regarding claim 4, the electrochemical cell is an oxygen monitor cell (column 16, lines 16 – 18).

Regarding claim 5, the metallic material of the inactive electrode (6-b or 7-a) further contains Pt (column 10, line 27 – 29).

Regarding claim 6, the metallic material contains Au (column 10, line 30).

Regarding claim 7, the metallic material contains Ag (column 10, line 30).

Regarding claim 8, the metallic material contains Cu (column 10, line 30).

Regarding claim 9, the metallic material contains Pb (column 10, line 31).

Regarding claim 10, the metallic material contains Au (column 10, line 30).

Regarding claim 11, the metallic material contains Ag (column 10, line 30).

Regarding claim 12, the metallic material contains Cu (column 10, line 30).

Regarding claim 13, the metallic material contains Pb (column 10, line 31).

5. Claims 1 – 2, 4 - 7 and 10 - 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Hasei et al. (US 6,274,016).

Regarding claim 1, Hasei ('016) discloses a gas sensor (Fig. 7, column 8, lines 56 – 58) comprising a measurement gas chamber (14 and 15), a sensor cell (11a and 11b), and an electrochemical cell (10a and 10b); said sensor cell comprising an active electrode (11a) facing said measurement gas chamber, a first reference electrode (11b) forming a pair with the active electrode, and a solid-electrolyte plate (7) having both the electrodes; and said electrochemical cell comprising an electrode (10a), with the composition of the inactive electrode in claim 1, facing said measurement gas chamber, a second reference electrode (10b) forming a pair with the electrode, and a solid-electrolyte plate (7) having both the electrodes; said electrode comprising a metallic material containing at least one selected from Au, Ag, Cu and Pb (column 11, lines 1 – 2) and an additional metallic material Rh (column 10, lines 65 – 67).

Regarding claim 2, additional metallic material Rh is added in an amount of from 0.01 to 3.0% (column 11, lines 21 – 25) by weight as outer percentage, based on 100% by weight of the metallic material.

Regarding claim 4, the electrochemical cell is an oxygen monitor cell (column 3, lines 29 – 35).

Regarding claim 5, the metallic material of the electrode (10a) further contains Pt (column 10, line 65 – 67).

Regarding claim 6, the metallic material contains Au (column 11, line 1).

Regarding claim 7, the metallic material contains Ag (column 11, line 1).

Regarding claim 10, the metallic material contains Au (column 11, line 1).

Regarding claim 11, the metallic material contains Ag (column 11, line 1).

6. Claims 1, 3-4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Kato et al. (US 5,866,799).

Regarding claim 1, Kato ('799) discloses a gas sensor (Fig. 2, column 11, lines 4 - 9) comprising a measurement gas chamber (6 and 8), a sensor cell (column 12, lines 46 - 51), and an electrochemical cell (column 11, lines 63 - 67 or column 12, lines 16 - 19); said sensor cell comprising an active electrode (28) facing said measurement gas chamber, a first reference electrode (24) forming a pair with the active electrode, and a solid electrolyte plate (4c) having both electrodes, and said electrochemical cell comprising an inactive electrode (16 or 22) facing said measurement gas chamber, a second reference electrode (18 or 24) forming a pair with the inactive electrode, and a solid electrolyte plate (4a or 4c) having both the electrodes; said inactive electrode comprising a metallic material containing at least one selected from Au, Ag, Cu and Pb (column 28, lines 29 - 31) and an additional metallic material Rh (column 28, lines 29-31).

Regarding claim 3, said electrochemical cell is an oxygen pumping cell (column 11, lines 63 - 67).

Regarding claim 4, said electrochemical cell is an oxygen monitor cell (column 12, lines 16 - 19).

Regarding claim 6, metallic material contains Au (column 28, lines 29 - 31).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1753

10. Claims 8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasei et al. (US 6,274,016) in view of Hasei et al. (US 6,319,377).

Regarding claim 8, Hasei ('016) discloses a gas sensor discussed above with regard to claim 1.

Hasei ('016) discloses the metallic material contains Au or Ag (column 11, line 1), but does not specifically disclose the metallic material contains Cu.

Hasei ('377) teaches the metallic material contains Cu (column 4, line 59).

It would have been obvious to one of ordinary skill in the art to have substituted Cu for Au or Ag in the metallic material of Hasei ('016) because these metals are recognized in the gas sensor art as equivalents for making electrodes as evidenced by Hasei ('377) (column 4, lines 55 – 59).

Regarding claim 12, Hasei ('016) discloses a gas sensor discussed above with regard to claim 5.

Hasei ('016) discloses the metallic material contains Au or Ag (column 11, line 1), but does not specifically disclose the metallic material contains Cu.

Hasei ('377) teaches the metallic material contains Cu (column 4, line 59).

It would have been obvious to one of ordinary skill in the art to have substituted Cu for Au or Ag in the metallic material of Hasei ('016) because these metals are recognized in the gas sensor art as equivalents for making electrodes as evidenced by Hasei ('377) (column 4, lines 55 – 59).

Art Unit: 1753

11. Claims 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasei et al. (US 6,274,016) in view of Miyata et al. (US 6,228,252).

Regarding claim 9, Hasei ('016) discloses a gas sensor discussed above with regard to claim 1.

Hasei ('016) discloses the metallic material contains Au or Ag (column 11, line 1), but does not specifically disclose the metallic material contains Pb.

Miyata ('252) teaches the metallic material contains Pb (column 11, line 36).

It would have been obvious to one of ordinary skill in the art to have substituted Pb for Au or Ag in the metallic material of Hasei ('016) because these metals are recognized in the gas sensor art as equivalents for making electrodes as evidenced by Miyata ('252) (column 11, line 36).

Regarding claim 13, Hasei ('016) discloses a gas sensor discussed above with regard to claim 5.

Hasei ('016) discloses the metallic material contains Au or Ag (column 11, line 1), but does not specifically disclose the metallic material contains Pb.

Miyata ('252) teaches the metallic material contains Pb (column 11, line 36).

It would have been obvious to one of ordinary skill in the art to have substituted Pb for Au or Ag in the metallic material of Hasei ('016) because these metals are recognized in the gas sensor art as equivalents for making electrodes as evidenced by Miyata ('252) (column 11, line 36).

Art Unit: 1753

12. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al. (US 5,866,799) in view of Ando et al. (US 6,214,208).

Regarding claims 7 and 8, Kato ('799) discloses a gas sensor discussed above with regard to claim 1.

Kato ('799) discloses metallic material contains Au (column 28, lines 29 - 31) but does not specifically disclose Ag or Cu.

Ando ('208) teaches metallic material contains Ag or Cu (column 30, lines 63).

It would have been obvious to one of ordinary skill in the art to have substituted Ag or Cu for Au in the metallic material of Kato ('799) because these metals are recognized in the gas sensor art as equivalents for their ability to suppress NO_x dissociation on electrodes as taught by Ando ('208) (column 30, lines 61 – 65).

13. Claim 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al. (US 5,866,799) in view of Miyata et al. (US 6,228,252).

Regarding claims 7 and 9, Kato ('799) discloses metallic material contains Au (column 28, lines 29 – 31) but does not specifically disclose Ag or Pb.

Miyata ('252) discloses metallic material contains Ag or Pb (column 11, line 36).

It would have been obvious to one of ordinary skill in the art to have substituted Ag or Pb for Au in the metallic material of Kato ('799) because these metals are recognized in the gas sensor art as equivalents for their ability to control the decomposition NO_x on electrodes as taught by Miyata ('252) (column 11, lines 31 – 36).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The use of Rh in combination with Au, Ag, Cu or Pb and further in combination with Pt is well known in the art. The following references are examples of some of them.

Wang et al. (US 6,579,435)

Sugaya et al. (US 6,635,162)

Sugaya et al. (US 20020011409)

Achari (US 4,237,722)

Okada et al. (US 4,769,124)

Furusaki et al. (US 4,857,275)

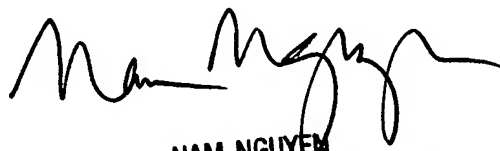
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Surekha Vathyam whose telephone number is 571-272-2682. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SV
18 August 2006



NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700